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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/849,310

05/19/2004

Cheng T. Horng

HT03-025/31

5783

7590

03/29/2005

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EXAMINER

DANG, PHUC T

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

26

Office Action Summary	Application No.	Applicant(s)	
	10/849,310	HORNG ET AL.	
	Examiner	Art Unit	
	PHUC T. DANG	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 and 21-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☒ Claim(s) 11-20 and 30-38 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>081104</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2818

DETAILED ACTION

Restriction/Election

1. Applicant's election with traverse of Group II (claims 11-20 and 30-38) and withdrawn Group I (claims 1-10 and 21-29) filed on February 17, 2005 is acknowledged.

The traversal is on ground(s) that see the election paper. This is not found persuasive because the fields of search for method and device claims are NOT coextensive and the determinations of patentability of method and device claims are different, that is process limitations and device limitations are given weight differently in determining the patentability of the claimed inventions. Also, the strategies for doing text searching of the device claims and method claims are different. Thus, separate searches are required.

The requirement is still deemed proper and is therefore made FINAL.

Applicants have the right to file a divisional application covering the subject matter of the non-elected claims of Group I (claims 1-10 and 21-29).

Claims 1-38 are pending in this application but claims of Group II (claims 11-20 and 30-38) are considered for examination at this time.

Oath/Declaration

2. The oath/declaration filed on May 19, 2004 is acceptable.

Information Disclosure Statement

3. This Office acknowledged of the following items from the Applicants:

Information Disclosure Statement (IDS) filed on August 11, 2004 has been considered.

Specification

Art Unit: 2818

This application is in condition for allowance except for the following formal matters:

i) The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed (see MPEP 606.01).

A title such as -- METHOD OF FORMING A MAGNETIC TUNNELING JUNCTION (MTJ) MRAM DEVICE AND A TUNNELING MAGNETORESISTIVE (TMR) READ HEAD -- is suggested. Note that, the claims are directed to a method of forming semiconductor device instead of to an apparatus of a semiconductor device.

ii) Claim Objections

Claim 30 is objected to because of the following reason:

In claim 1, line 8, "... said sputter-etched Ta layer ..." should change to -- ... said sputter-etched Ta overlayer... --.

Allowable Subject Matter

4. Claims 11-20 and 30-38 would be allowed.

The following is a statement of reason for the indication of allowable subject matter:

Claims 11-20 and 30-38 are considered allowable since the prior art of record and the considered pertinent to the applicant's disclosure does not teach or suggest a step of oxidizing the Al layer in a plasma oxidation chamber, by a process of radical oxidation, to form a tunneling barrier layer on the pinned layer, the tunneling barrier layer being ultra-thin, smooth and having a high breakdown voltage as a result of the Nicr seed layer formed on the sputter-etched Ta overlayer as recited in claims 11 and a step of forming a naturally oxidized tunneling barrier

Art Unit: 2818

layer on the pinned layer, the tunneling barrier layer being smooth and homogeneous as a result of being formed on the Ta sputter-etched overlayer and the Nicr seed layer as recited in claim 30.

Prosecution on the merit is closed in accordance with the practice under Ex Parte Quayle, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

Conclusion

5. **Applicants are advised to cancel the non-elected claims of Group I (claims 1-10 and 21-29) in response to the next Office action if the application is considered to be allowed.**
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is (571) 272-1776. The examiner can normally be reached on 8:00 am-5:00 pm.
7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and After Final communications.
8. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Phuc T. Dang

PD



Primary Examiner

Art Unit 2818